Hi-Fi Traffic Clearance Technique for Life Saving Vehicles using Differential GPS System

N.Yuvaraj, V.B.Prakash, D.Venkatraj

Abstract—This paper may be considered as combination of both pervasive computing and Differential GPS (global positioning satellite) which relates to control automatic traffic signals in such a way as to pre-empt normal signal operation and permit lifesaving vehicles. Before knowing the arrival of the lifesaving vehicles from the signal there is a chance of clearing the traffic. Traffic signal preemption system includes a vehicle equipped with onboard computer system capable of capturing diagnostic information and estimated location of the lifesaving vehicle using the information provided by GPS receiver connected to the onboard computer system and transmitting the information's using a wireless transmitter via a wireless network. The fleet management system connected to a wireless receiver is capable of receiving the information transmitted by the lifesaving vehicle .A computer is also located at the intersection uses corrected vehicle position, speed & direction measurements, in conjunction with previously recorded data defining approach routes to the intersection, to determine the optimum time to switch a traffic light controller to preemption mode so that lifesaving vehicles can pass safely. In case when the ambulance need to take a "U" turn in a heavy traffic area we suggest a solution. Now we are going to make use of computerized median which uses LINKED BLOCKS (removable) to solve the above problem.

Keywords—Ubiquitous computing, differential GPS, fleet management system, wireless transmitter and receiver computerized median i.e. linked blocks (removable).

I. INTRODUCTION

PREEMPTION mode is a mode where priority is given to the new process which enters into a cycle. Preemption systems are widely used to provide transit and lifesaving vehicles with the capability of disrupting a regular sequence of traffic signals in order to provide right of way through an intersection. Preemption systems can decrease the time taken for life saving vehicles to reach the hospital in correct time. Preemption mode is a mode where priority is given to the new process which enters into a cycle. Preemption systems are widely used to provide transit and lifesaving vehicles with the capability of disrupting a regular sequence of traffic signals in order to provide right of way through an intersection. Preemption systems can decrease the time taken for life saving vehicles to reach the hospital in correct time.

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II. ACCESSORIES

1. Hospital should have a button or switch to transmit an emergency signal to the fleet management controller system.
2. Ambulance must contain an onboard computer system, wireless transmitter, and wireless receiver.
3. Fleet management systems should have wireless receiver.
4. Median should be computerized i.e., it is made of linked blocks (removable).

III. CONDITIONS

Ambulance should switch on GPS, the GPS receiver connected with the onboard computer system transmits the diagnostic information via wireless transmitter, fleet management systems capable of capturing diagnostic information, estimating the location of life saving vehicle using wireless receiver [2]. There should be a WAN (wide area network) between Fleet management systems and traffic management center to transfer the images of the lifesaving vehicles.

IV. IMPLEMENTATION

After emergency reported in a hospital, initially hospital faculty has to press the switch that transmits the emergency signal to fleet management system. The ambulance contains GPS receiver equipped with onboard computer system capable of capturing diagnostic information and estimated location of the lifesaving vehicle using the information provided by GPS receiver connected to the onboard computer system and transmitting the information's using a wireless transmitter to fleet management system via a wireless network [1]. The fleet management system connected to a wireless receiver is capable of receiving the information transmitted by the lifesaving vehicle.

A. How traffic controller knows about this?

The traffic management center and fleet management center are connected by a network. all the information about the life saving vehicles. The traffic inspector checks whether the given information is valid or not. If satisfied, the traffic inspector suggests every vehicle to clear the way as quickly as possible and displays AMBULANCE IS ARRIVING-   in the computerized screen (MEDIAN). The traffic inspector sends the information about the arriving ambulance to the road transport company which gives a well-defined maps such that ambulance could reach the destination safely and quickly. This above technique is also used when ambulance needs to take a

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patient who is in critical condition.

V. SPECIAL FEATURES

How the computerized median made up of linked bocks (removable) works? Refer Fig. 6 and Fig. 7 In case when an ambulance needs to take a 'U' turns it takes a long time now as the 'U' turn can be made at the pre-designated place only. When the median is computerized the traffic inspector can open the median for easy movement of the traffic. The median is made up of computerized linked blocks. In order to open the median, the ambulance should specify the linked block number that has to be removed to the traffic inspector so that he can get the address of that block and remove it.
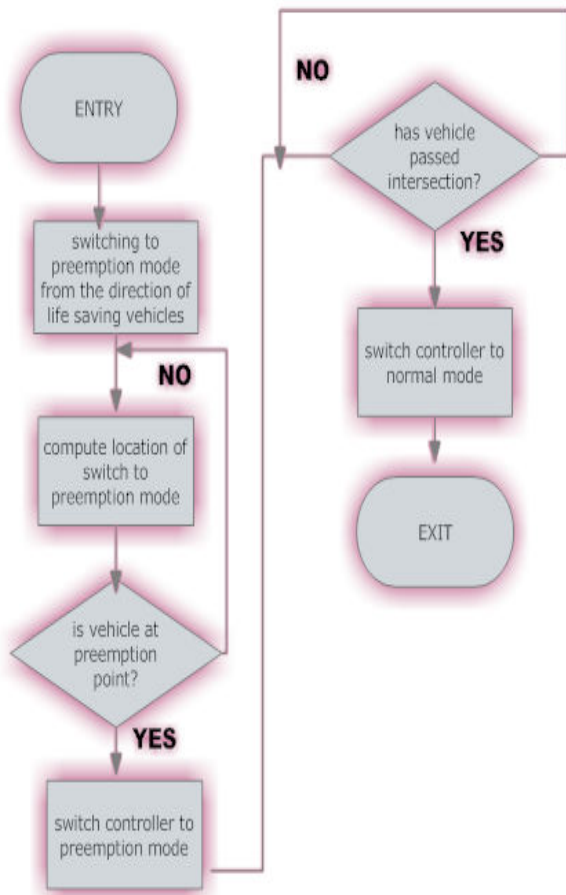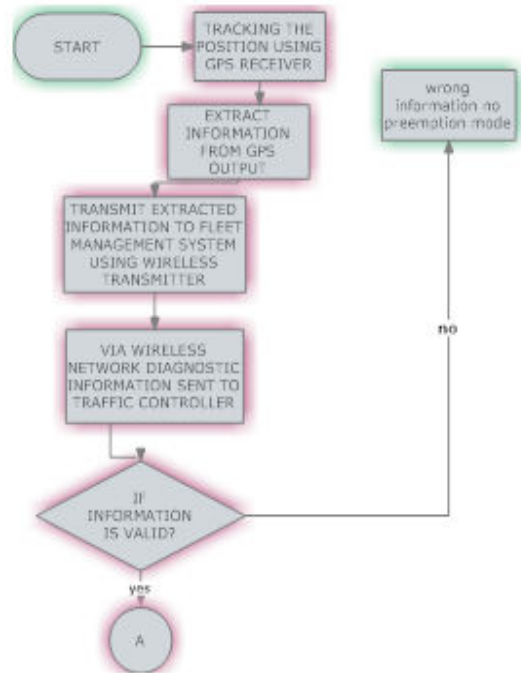
Fig. 2 shows how information is sent to fleet system

Fig. 1 shows how preemption mode is selected
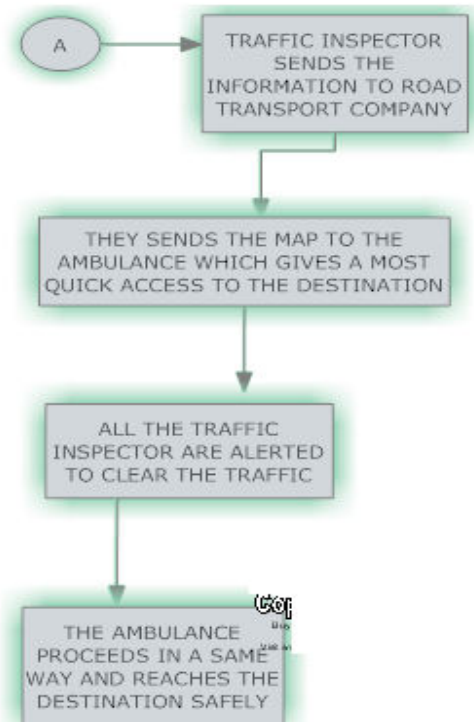
Fig. 3 shows how map is sent to ambulance

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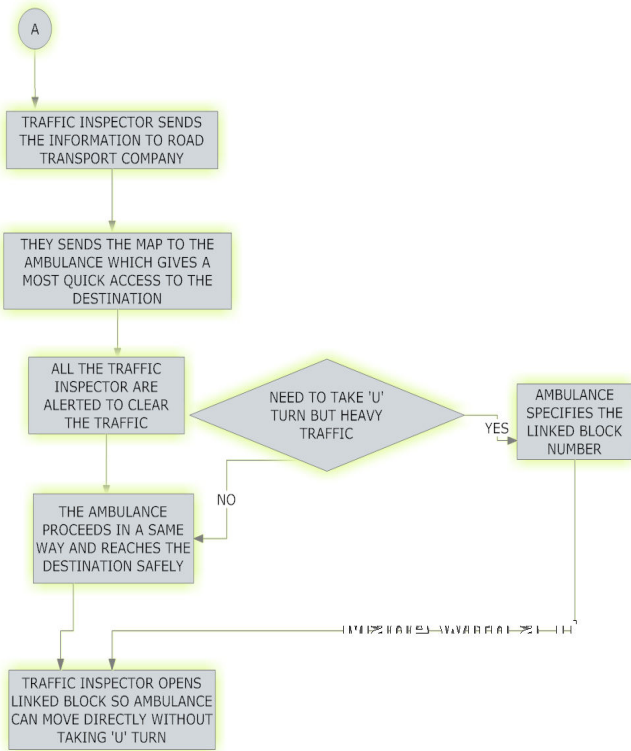
Fig. 4 shows how computerized median works
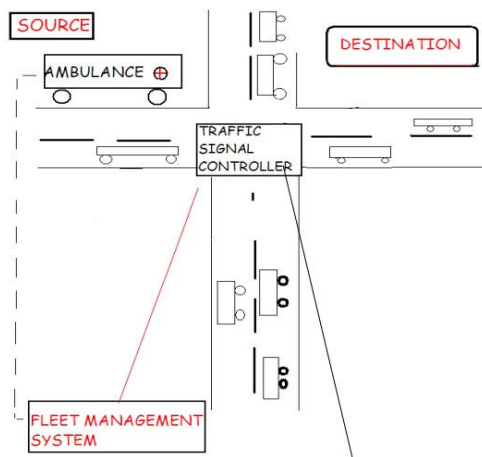
Fig. 5 shows how signals transmitted from e saving and fleet management system.
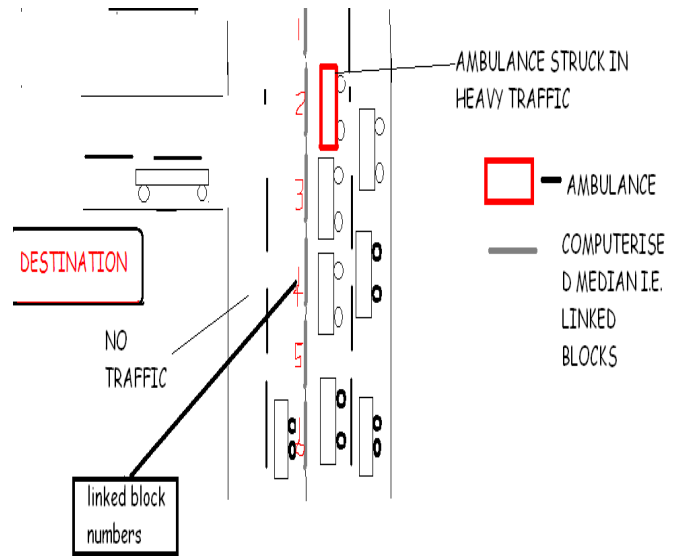
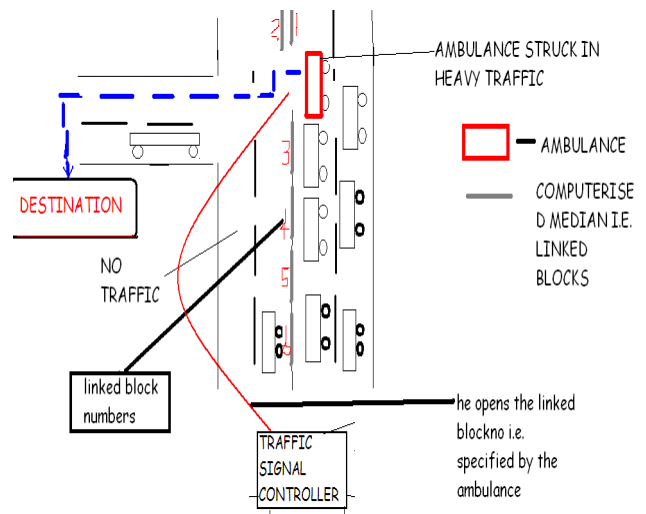Fig. 6 shows how preemption mode is selected

Fig. 7 shows how preemption mode is selected

VI. CONCLUSION

So we conclude that if there is a clearance of traffic for lifesaving vehicles, precious life can be saved for human being .This may show the way for future generations be computerized and pervasive computing based.

NOTE: This is not preferred only for ambulance. It is preferable for fire engine also.

REFERENCES

[1] James A. Landay, Gaetano Borriello, "Design patterns for ubiquitous Computing", pp. 93-94.
[2] http://www.google.com/patents/about?id=iogjAAAAEBAJ&dq=differential+GPS.